Hobbies WEEKLY

CONTENTS

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COMBINED WOOD AND METAL

LAMP BRACKETS

IN the two designs for electric lamps which we give here, we have introduced wood for the constructional part, with metal as an added decorative material. Although oak would, undoubtedly, be our choice of wood, there is no reason at all why mahogany or even a cheaper wood should not be used. Oak would receive a finish of stain rubbed up with oil or wax, while the mahogany should be french polished or varnished.

For the metal parts we use strips of the required shape and width cut from ordinary tin canisters or food containers. They can be painted with black matt enamel. The two designs are shown complete and finished in the sketches on this page, and we will first describe that design marked (A).

The Wall Plate

There is for this a wall plate for hanging direct on the wall measuring 14ins. long by 2ins. wide and ¼in. thick. An outstanding arm 11ins. long and the same in width as the wall plate and ¼in. thick.

The pieces should be carefully marked out and cut cleanly and evenly and glasspapered to smooth edges. These two pieces are mortised and tenoned together, as shown in Fig. 1, the outline of the whole article being given in Fig. 2.

The top and bottom edges of the wall plate are rounded neatly with the fretsaw also the outer end of the projecting arm. The bracket which fits between these two rails is shown in Fig. 3. Also in this diagram is shown the bracket piece for our second design.

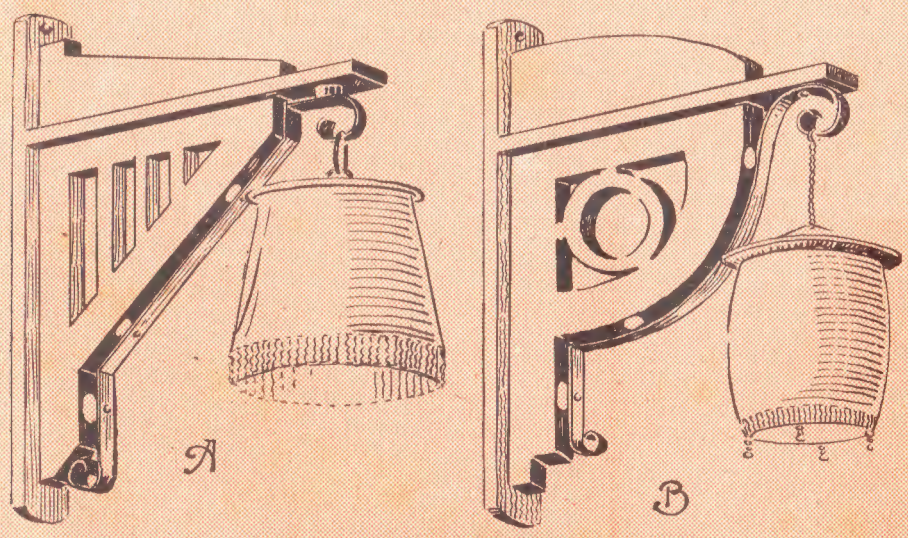
Necessary Wood

For the larger bracket we shall require a piece of wood measuring 10¾ins. by 7¼ins. and for the smaller one a piece 10ins. by 6ins., both are to be ¼in. thick. Make tracings on thin paper of the finished outlines of the brackets and transfer the latter to the pieces of wood by means of carbon paper and a sharp pointed hard pencil.

After cutting with the fretsaw, clean up the surfaces with glasspaper before gluing the parts together. One or two countersunk screws are run in from the back of the upright rail and also one down through the top shaped rail glued above the projecting arm rail. This rail is 7ins. long by 1⅞ins. wide by ¼in. thick.

Metal Parts

The metal parts are about ⅝in. wide stuff, and if the main piece cannot be obtained in one length, a junction may easily be made at one of the screwed button connections, the pieces being made to overlap a little, with the end of the outer one, perhaps, curved up to give effect.



The buttons consist of small washer-like discs pierced, of course, for the screws and shaped round to fit the bracket. Should the metal not be stout enough to adequately support the lamp at the top, an additional strip of stouter metal may be fixed within the outer scroll and screwed through with the other strip. If it is found awkward to insert a screw at this point, a small bolt and nut with washer above may be substituted for the ordinary screw.

The Alternative Bracket

In considering design (B), the woodwork is very similar to that bracket just dealt with. The bracket may, if desired, be just screwed to the outstanding arm

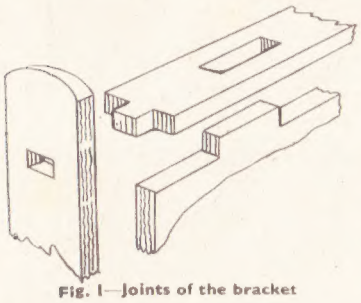


Fig. 1—Joints of the bracket

and the mortise and tenon here be omitted, see the squared-up diagram Fig. 2.

The simple shaped piece above the arm can be glued to the arm centrally and a screw run down in the forward end of the piece to run into the arm. The hole should be countersunk and afterwards filled in with some kind of stopping, such as glue and sawdust or even putty.

This work, however, is not really essential, as the screw will not be seen when the bracket is in place on the wall, the arm being above the eye line. A screw should also be put through the wall plate into the top shaped rail to bind it well together at this point.

The metal work is plainly shown in the outline Fig. 4. Here again a $\frac{1}{2}$in. or $\frac{3}{4}$in. wide strip of metal is bent to follow the outline of the bracket to finish under the outer end of the arm in a scroll. Three hardwood shaped buttons are again in use here, and holes must be drilled in the metal strip, or they may be punched, in which case the burr left at the back of the metal must be filed off and made neat before the screws are run in.

The shaping of the metal in both cases of design (A) and (B) may be made with the aid of round-nose pliers. The scroll under the end of the arm may be

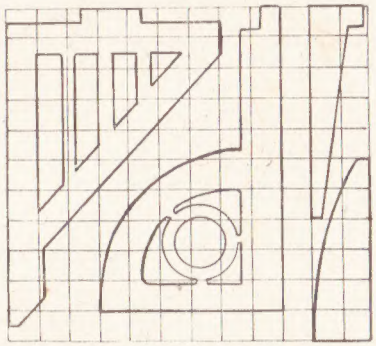


Fig. 2—The two fretted supports

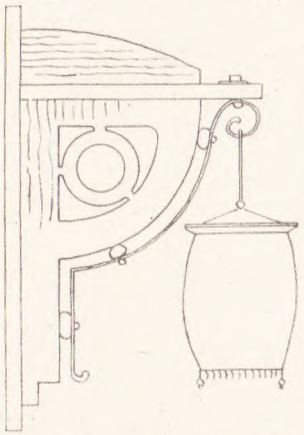


Fig. 4—The metal work in place

reinforced in a similar manner to our first design with an additional layer of strip metal and a bolt and nut again used to make a firm fixing between the metal and the wood arm.

Fixing Links

The choice of link between the bracket and the lamp itself may be left to the individual worker, and made to suit the pattern of shade adopted. In wiring the lamp the flex should be brought down the wall and led along the top arm of the bracket.

A groove could be made in that part of

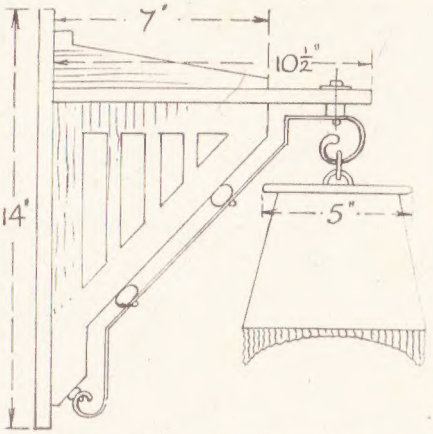


Fig. 3—Side view of bracket and lamp

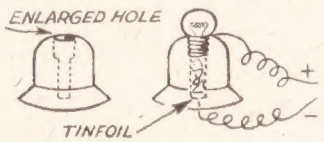
the wall plate above the arm and in the back surface in which to carry the flex. It could then be taken through a hole and led direct along the arm and down to the lamp. Do this, of course, before finally fixing the bracket.

Neat Buttons

The wood fixing buttons should be carefully finished off and made neat in appearance before adding the varnish, stain or wax polish. The insides of the frets in the brackets must be carefully coated with the stain, etc., using a small brush. (340)

A Bulb Holder

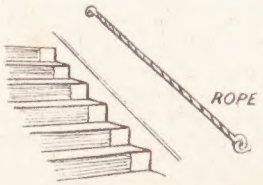
HERE is a simple tip for a bulb holder, which anyone can make. Take an ordinary cotton reel and saw the end off. Next with a penknife or chisel, round off the sawn end and finish it with



glasspaper. Make the hole in the shaped end slightly larger and screw the bulb in. In the other end, place some tinfoil so that it touches the bulb. Attach some wire to the tinfoil and lead it to the battery. Wind the other wire around the bulb and lead it to the battery. You can screw this on your bed rail, and you have an efficient bedlight.

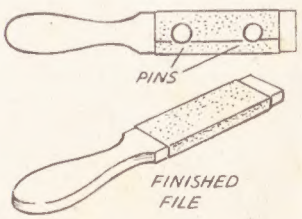
Simple Handrail

MANY houses and old cottages in the country have staircases without handrails. This very useful and attractive idea illustrated, solves the problem of an expensive banister. Get a piece of good thick rope which can be obtained in any length and any width and ask the man in the shop to splice rings on to both ends. Have large brass ornamental hooks fixed at each end of the staircase to hold the rope and you can, if you like, paint the rope to match the stair carpet.



A Glasspaper File

THIS tool is useful for cleaning butt joints or other straight cuts. It consists of a piece of wood 9ins. long, 2ins. wide by $\frac{1}{4}$in. thick. A piece of



glasspaper is fastened on the wood which is cut to a convenient shape. The paper is fastened on to the wood with drawing pins or glue, and can be taken off when another grade is required.

A real gift to any golfer or Club is this

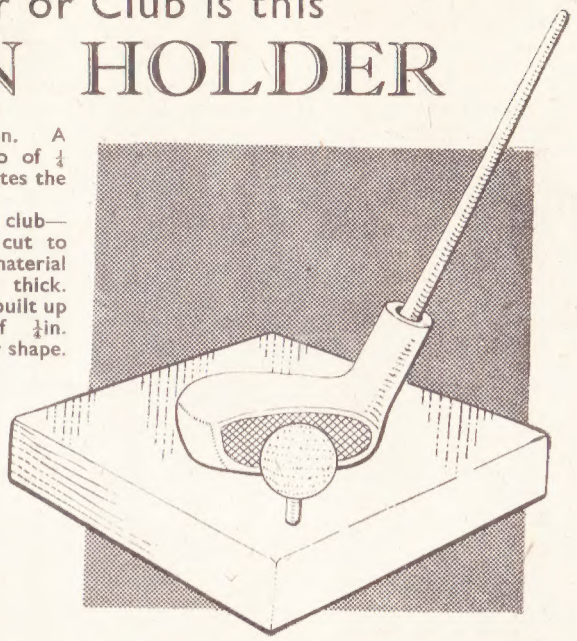
NOVELTY PEN HOLDER

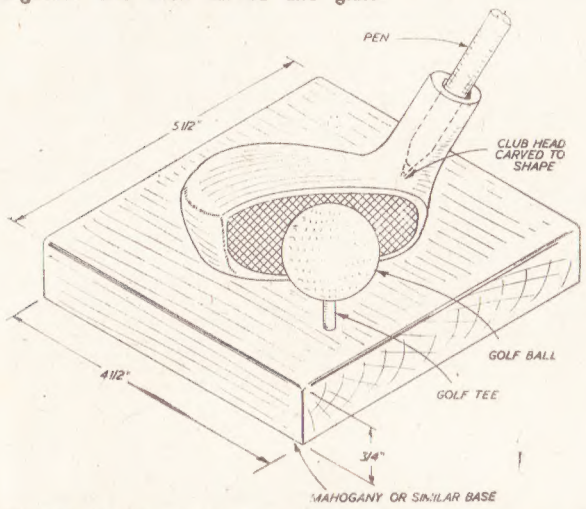
THIS simple, but extremely attractive desk-type pen holder is very easy to make—and an ideal gift for a golfing friend. It consists simply of a golf club head screwed to a polished wooden base. The shaft portion of the club head is hollow to take any of the popular ball-point pens now so greatly favoured. A golf ball mounted on a tee immediately in front of the face of the club provides an appropriate finishing detail.

The club head itself is made up of separate laminations, securely glued together and then carved and glass-papered to the curved shape required. Two identical parts are required—(A) and (B)—fretted out from ¼in. thick material, preferably one of the lighter woods rather than ply. The intermediate piece—(part D)—is of similar shape and thickness without the shaft portion.

When these three are glued together the hollow shaft is completed with two pieces of ¼in. square material, leaving a square hole exactly ½in. square to accommodate the pen. A small fillet block, also of ¼ sheet material, completes the basic club assembly.

The rear face of the club—(part E)—should be cut to profile shape from material approximately 1in. thick. Alternatively it can be built up from four layers of ¼in. material, cut to similar shape. The whole is then glued and clamped together and left to set. The material can be the same throughout, or alternative layers of dark and light wood can be used which, when polished and finished, will give a particularly pleasing appearance.



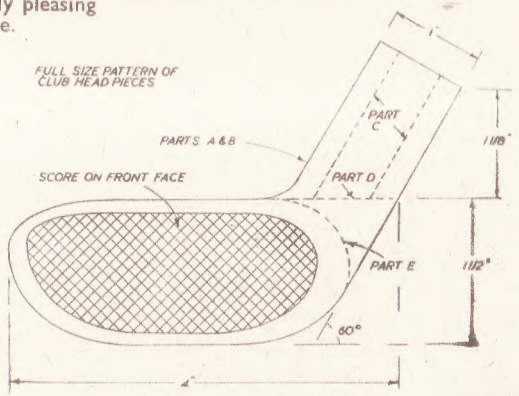


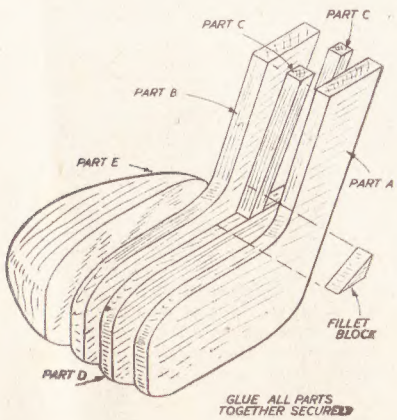
When thoroughly set, the club head must be carved and glasspapered to shape. The actual contours are not all important. If you have a golf club available you can use that as a visual guide. Otherwise simply carve to a reasonable looking shape and glasspaper down quite smooth. Mark off the contact area on the face of the club and score this with criss-cross lines, using a scribe or similar sharp instrument and a straight edge.

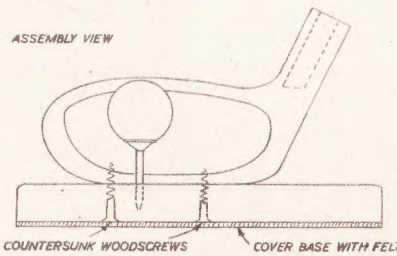
For the base, select a piece of ¾in. or ½in. mahogany or similar material. The finished club head is then attached roughly to the centre of this, set diagonally across it. But first it would be advisable to glasspaper and polish the base block.

The head is held permanently in position by two woodscrews countersunk in the underside of the base. A hole should also be drilled in the top of the base roughly 1¼ins. from the front face of the club and in line with the centre of the club. This hole should be slightly smaller than the shaft diameter of a standard golf tee. The golf tee should then be a force fit in the hole, with a little glue applied to make the joint permanent.

A golf ball should be mounted on this tee, glued in place, so it will not topple off. (278)





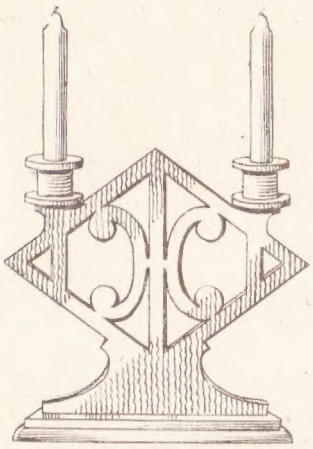


MATERIALS

Parts A, B and D—¼in. thick.
Parts C—¼in. square.
Part E—1in. thick material, or four at ¼in.
Fillet block—¼in. thick.
Base—5½ins. by 4½ins. by ¾in.
Two wood screws.
One golf tee.
One golf ball (optional).
Covering material for base.

The craftsman with a fretsaw can make these wooden

ART CANDLESTICKS



IN the illustrations we give two designs for art candlesticks which may be easily and cheaply made. The fretworker, we feel sure, will be pleased with these modern designs because they give scope for his skill, first of all in some simple drawing and enlarging, and then, of course, with the handling of the fretsaw. Light and brittle wood is not suitable, as certain projections in the design would be liable to be knocked off, and the slender parts would split through.

Two-part Base

The first parts to make will be the bases. Each design shown is made with a two-layer base, as the detail Fig. 1 shows. The three-candle design needs a lower piece measuring 9ins. by 3ins., with an upper layer 8½ins. by 2¾ins., while that design bearing the two candles need a lower piece 8¼ins. by 2½ins. and an upper layer 7½ins. by 2ins. Both layers in each case may be of ¼in. wood, but it would be a good plan to have the lower piece of, say, ⅜in. thick wood to give weight and so insure the candlesticks standing firmly.

The upper layer in each case should have a mortise cut in it 1⅛ins. long by ¼in. wide. When cutting these mortises with the fretsaw, keep to the inside of the lines, so when the tenon of the upright comes to be fitted, there will be a neat and tight fit. If a too tight fit has been made, then do not try enlarging the mortise with the saw or the file; but rather glasspaper down the upright slightly and tenon until it just makes an easy fit.

All four edges of the lower members of the bases are rounded to a 'thumb' moulding with file and glasspaper.

Margin Equality

In gluing up the base pieces see that an equal margin is left all round each one. A very good method to adopt is to lay each piece in position one on top of the other before the operation of moulding or shaping the edges is done.

Then gauge off the margins carefully with a rule or a pair of dividers. Prick in a small hole at each of the four corners.

The work of rounding the edges can then be proceeded with and the top surfaces lightly cleaned off with fine glasspaper. The pricked holes are easily seen and form a direct guide to the gluing down of the two pieces.

Uprights

The sizes of the main uprights are 8¼ins. by 7ins. for the three-candle light, and 9ins. by 8¼ins. for the two-candle light. Both are ¼in. thick. To get the correct outlines we give plain diagrams, Figs. 2 and 3, half of each of which are squared over with ½in. squares ready for enlargement.

Draw the squares full-size on a sheet of thin paper, using a common centre line as shown. Then draw in the design through the squares, following each carefully. Now crease the paper to the centre line and trace the second half of the design. The completed outline can now be transferred to the wood by means of carbon paper.

It only remains now to cut the whole with the fretsaw, keeping carefully to the drawn lines during the process. Clean off the edges where necessary and glue the uprights into their respective bases, cleaning off immediately any superfluous glue that may be squeezed over.

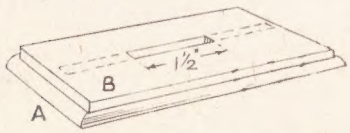


Fig. 1—The simple two-piece base

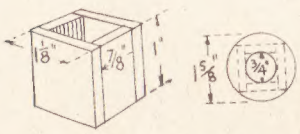


Fig. 4—The candle socket

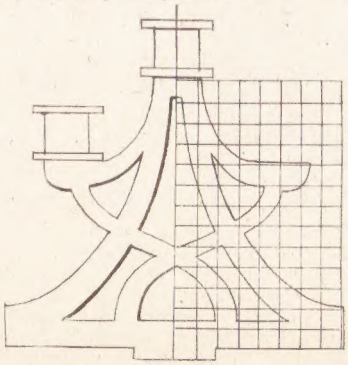
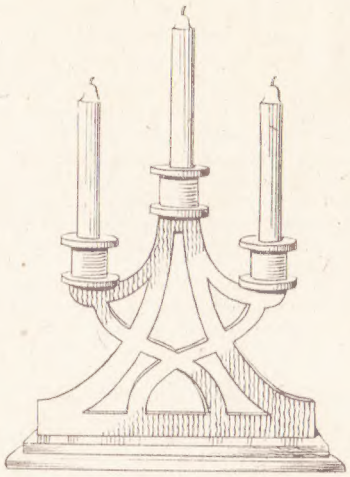


Fig. 2—Marking out the pattern



Next make the candle cups or sockets. Their simple construction is shown in Fig. 4. Cut two discs ⅝in. thick, each 1⅞ins. diameter. One of the discs will have a hole cut ⅞in. in diameter, into which the candle will fit. The actual candle socket will be formed from four pieces ⅛in. thick, and all 1in. long and in widths as shown in Fig. 4. Glue them together in the square shown, making firm butt joints and with all the edges flush.

Finish

When the glue has hardened, rub the top and bottom end-grain surfaces down on glasspaper until perfectly level and also rub all four outer surfaces down to clean away any glue that might show on the face. Glue the sockets to the discs, as shown in the detail on Fig. 4.

The finished work may be stained dark and rubbed up with wax. If a painted finish is desired, a good enamel could be carefully brushed on. A variation could be made by painting the sockets and the rims with gold paint. A square of green baize might be glued to the underside of the bases.

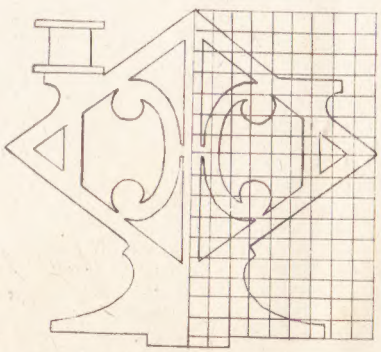


Fig. 3—An alternative design squared

The expert and the beginner will learn from these

FRETWORK TOOL HINTS

THERE are probably many new readers who have, during the Christmas season, been presented with or obtained a Hobbies Fretwork set of tools, and have already become delighted with the use of them in many ways. As usual, the beginner may have found little problems which will automatically disappear as they become more experienced. Most beginners have the usual fault of attempting too much too soon.

Having seen the delightful pieces of work which can be made by the expert craftsman, they imagine they will be able to do the same within a very short while. This, of course, is a fallacy which they must bear in mind, and proceed to improve their work gradually by learning all they can from their actual experience, and also by studying the pages of *Hobbies Weekly* in order to incorporate the various hints which appear regularly.

Saw Tension

For instance, the beginner is usually afraid to have the saw too tight in his handframe or machine, but he should realise right away that there must be a high tension on the sawblade to obtain the best work. About ¼in. of each end of metal is put into the clamps, and these are tightened right up. Very often the nut is not screwed far enough, and the sawblade end pulls out whilst the work is in progress, either binding the saw or breaking it completely.

The sawblade, then, must be held very firmly in both ends. The steel used in the construction of the handframe, is of a special type, and the length of the arm provides a certain springiness which creates the tension. The top arm should, therefore, be pressed inwards towards the bottom to allow the sawblade to be put in, so that when the blade is tightened up, the strength of the arm itself pulling outwards, provides the necessary hold on the blade and keeps it quite taut.

Testing a Blade

At the beginning, too, the new operator is slightly afraid of the work, feeling that the saw may break and make him jump at the same time. This is only due to inexperience and lack of control on the actual frame. Even so, the beginner is apt to break a few blades and feel that he is constantly having to replace them. This, however, does not occur later when, as suggested, proper control of the handframe and of the work, reduces the trouble considerably.

Always, therefore, get your sawblade very tight and test it before use by a simple trial. Take the middle of the blade between the finger and thumb, and stretch it slightly sideways. When you release it, it should twang very much like a violin string. If it merely sounds dead, then your tension is not enough, and you can put a longer amount of the blade into the frame to overcome this.

Work that Jumps

A second common trouble with the beginner, and also one which leads to saw breakage, is the failure to hold the work firmly down to the table. Here again, the operator is often afraid of his fingers becoming damaged, and so at first keeps them well away from the cutting blade. In consequence, the wood is much more apt to jump from the table, and in turn, likely to break the saw.

On the other hand, if the work is held firmly down with the fingers reasonably close to the blade itself, then a greater control is provided and there is little likelihood of the wood jumping, with the subsequent damage.

A third common cause of breakages is, particularly with newcomers, that they attempt to work too fast. The sawblade should not be forced into the wood forward by too much pressure. You will remember in carpentry that a handsaw is used its whole length, and cuts its own way through the wood without undue pressure.

Steady Even Pressure

The same applies to the ordinary fretsaw. It is not the forceful forward movement which does the trick. By pressing it too fast, instead, you have every likelihood of the saw binding in its inability to operate quickly enough. Later, perhaps, when you become more efficient, the speed of the saw up and down can be increased considerably.

First, however, take the operation slowly but with a steady up and down motion, gradually putting the saw forward into the wood. You will find it cuts just as easily, and much more efficiently, with a steady forward pressure, rather than with a definite push which will probably only cause trouble. Trial can be made on any ordinary waste wood by drawing a few pencil lines, and

A Simple Woolwinder

HERE are details for making a useful and very easy-to-make revolving frame for holding knitting wool for winding.

MATERIAL

2 pieces of wood (preferably oak) size 23ins. by ½in. by ⅝in. approx.
1 circle of wood or wheel—2ins. by ½in.
4 dowels—3ins. by ¼in.
1 nut and bolt—2ins. by ¼in.
1 small screw clamp.
2 washers, screws, etc.

The method of construction is really quite simple. First halve the two cross members, and screw to centre wheel, as illustrated. Now, at 1½ins. from each end of both crossbars, drill a ¼in. hole at a slight angle, so the four pegs to be inserted will slant outwards. Now an additional hole at 3ins. from each end for adjustment.

Next drill a ¼in. hole through the centre of crossbars and wheel. Insert the four dowels to complete the construction of the frame.

Clamp Assembly

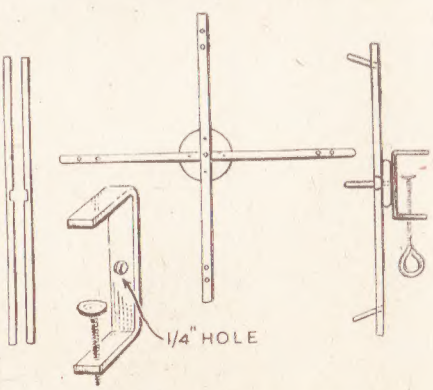
We now come to the assembly of the clamp and spindle.

First drill a ¼in. hole in centre of clamp, as seen in the diagram. Next cut off the head of the bolt and force the shaft into hole, thread outwards. Secure by burring the end and a few heavy blows on edge of the clamp.

The two parts are now ready to put together. First place one washer on the spindle, then the frame with the centre wheel or the disc nearest to the clamp. Next another washer and finally secure with a nut, allowing the frame to revolve freely. Secure the nut in position by burring the thread or by adding a lock-nut.

Thoroughly glasspaper all edges and surfaces, round off ends of dowels and crossbars, and the winder is ready for use.

The winder may be clamped to the edge of a table vertically or to the back of



a chair in a horizontal position. The four pegs should not be fixed, except by their tightness, as they should be removed for adjustment or storage. They should also be only at a very slight angle to the frame. (311)

endeavouring to keep to them. From these you can proceed to a more intricate curve or angle, and so having obtained complete control, be able to operate almost any work.

Upright Saw

Another fault which is usually found in the beginner, is the failure to keep his saw upright. Here again it is only a matter of use, and general experience, but it is an essential point to watch at the beginning, otherwise one gets into the habit of a sloping blade and consequently bad work.

Having this blade at an angle will upset any constructional undertaking, particularly where butt joints are concerned—that is, where the end of one piece of wood has to butt up against the flat surface of another. Imagine, for instance, the four sides of a box where the end of one side has been cut at an angle. This angle will not bed down as it should on to the other side, and the whole shape of the box is spoiled.

In fretted portions, too, a sloping saw will make a very bad pattern. One side of the wood may be all right, but if you look at the reverse you will see that the pattern is quite different because of the incorrect angle of cutting.

Drilling Holes

Then there is the matter of drill holes. You can save yourself considerable time very often by studying the best position in which to make them. Some workers make the drill holes as they proceed, and as each one is required. This has the advantage that having cut one part, you may realise a better position for the drill hole when the next piece is put down.

On the other hand, if you make all drill holes at one operation, it certainly does save the time of picking the drill up and laying it down more frequently. In any case, of course, you must have a piece of waste wood under the actual work to prevent the drill making holes in the workbench or table.

A Matter of Pressure

There is also a right and wrong way of using these small drills. By putting too much pressure on the top, the tiny bit is forced into the wood, and may bind itself there and refuse to go through, or it may sink into the wood too rapidly and pass through too far into the waste wood beneath, thus involving a considerable amount of work in extraction. The bobbin of the drill should be moved up and down rapidly, whilst the bit is being held lightly in place. Pressure on the top gradually increases whilst the bobbin is still moving and the bit allowed to bite its way into the wood as required.

You should also get used to judging how far the actual bit has to go to pass through a piece of wood in use. If it is ¼in. thick there is no need to go on drilling until the bit has passed through another ¼in. into the waste wood beneath.

Careful Extraction

Some breakages, too, occur with the beginner in the extraction of the drill bit and breaking it in the process. This is very often because he fails to pull it out straight, and also to turn it slightly as he is pulling. These two points should be watched.

If the wood is of a close character, then the drill wants turning as it comes away, to prevent the bit head binding in the tiny hole. You can, of course, replace these bits quite easily, and there is a range of sizes in them for holes of various diameters.

A drill hole should be made fairly near an actual cutting line, but not actually on it. If near the cutting line, then the saw can be used to go up to its proper position and turn along the line required. If you make the drill hole actually on the line itself, then a portion of the hole will probably be seen when the piece is cut out, particularly if you are using a fairly large sized bit.

Glasspapering

Then take the operation of glasspapering your work after completion. This may sound quite straightforward, but here again, the worker can save himself much time and labour by using the proper method and materials. It is quite wrong, for instance, to have just one grade of glasspaper and use it for everything. There are, as you know, various grades ranging from a very fine to quite coarse.

Normally a medium grade is satisfactory for most work. A coarse grade tears the wood, and actually scratches its surface so that if you use it you have to do the operation again with a finer grade, to take away the scratches previously produced.

On the other hand, a very fine grade takes a long time to make any impression on the wood, and undue labour is involved in consequence. The fine grade is principally used for small work, and for getting the final perfectly smooth, semi-glossy surface prior to staining or polishing, or whatever finish is being applied.

Progressive Cleaning

It is a good plan, too, to clean each part as it is cut, rather than leave all the cleaning to be done at the end. The work of cutting is certainly more interesting than glasspapering, but you must realise if you do all this cutting you will only find the job of cleaning all the parts more monotonous, when they have piled up at the end. If, therefore, you clean each one as completed you vary the work with a consequent lack of monotony.

Fit Bench Stops

The parts being glasspapered should be put flat on the bench, and the glasspapering done with a circular movement so the whole of the surface is covered evenly and quickly. The wood should be held against a stop, which can be a couple of nails driven almost into the bench but left projecting so that the head just holds into the edge of the fretwood. Round-headed screws are even better, as they are less likely to mark the edge of the wood.

Do not forget, too, that these edges should also be given a rubbing with glasspaper, not, however, by holding the work in the hand and running the glasspaper along the narrow edge. If you do that, you are apt to curve the edge or make it irregular. In such cases, pin the sheet of glasspaper to the bench and hold the work upright upon it so that the edge is maintained flat and true. Here again, you must be careful not to move the upright wood sideways, or you will find one end or one edge of the board becomes more papered down than the others.

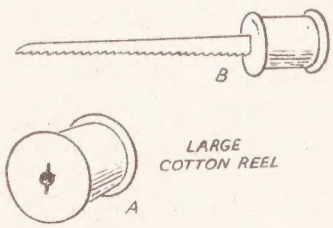
A Useful Block

In every case, when you are using the glasspaper on the wood, it should be held round a flat surface such as a block of wood or, better still, the special glasspaper holder provided by Hobbies Ltd. This holder has a spring handle which holds the strips of glasspaper firmly in place. The strips can easily be replaced as they become worn. The packets of refills provided contain varying grades, and these can be altered as needed.

For small work you can use small pieces of glasspaper, and a model maker frequently provides his own filing strips of varying grades. These consist of pieces of wood about 1in. wide, ¼in. thick and 9ins. long. One end can be left and even shaped to make a suitable hand hold, and on the surface of the other end—about 6ins. of it—a strip of glasspaper can be glued down, one grade on one side and one on the other. This forms a very useful little hand file for small pieces such as used in model making. (341)

Handle for Pad-saw

A TEMPORARY handle for a pad-saw is made from a cotton reel. With a chisel or a strong sharp screwdriver, make a slot through the middle of the hole as in (A). Next the pad-saw should be put in, driven tight and



wedged as you see at (B). The reel makes quite a comfortable handle providing it is not too large.

How the home handyman can make a

HANDY GAMES TABLE

IT is nice to have a small table that can be used entirely for games. The average size dining table is not at all convenient for draughts or chess, and it can also be too large for most card games.

The subject of this article—a games table—was designed to fulfil the needs of the keen player of many games. The idea was to have a compact article taking up very little room, which could be quickly adapted for the purpose of playing whatever type of game is required. When finished with, a neat top covers the table, making it into an attractive piece of furniture.

Lid Top

The top of the table is in the form of a lid, which when taken off, discloses a draughts or chess board. On either side of the squared board is a sunk portion to hold the draughts or chess men as they are captured. This will enable you to sweep the board in a tidy manner.

By reversing the squared board another game may be brought to light, and by taking the board right out we have the recessed top covered with felt, which can be used for card games or even tiddly-winks.

The making of the board is a straightforward job for the handyman, and almost any kind of wood can be used. It would be nice, however, to make it to match the existing furniture in the room.

Personal Sizes

Although the measurements given will make a most useful sized table, it is not necessary to stick too rigidly to them. You may have ideas for improvements to suit your own personal tastes regarding both size and the kind of games the table will be used for.

Fig. 1 shows the table, round the top of which is an edging of narrow wood projecting above the table top about ¾in. This forms a recess into which the chess/draughts board shown in Fig. 2 is made to fit.

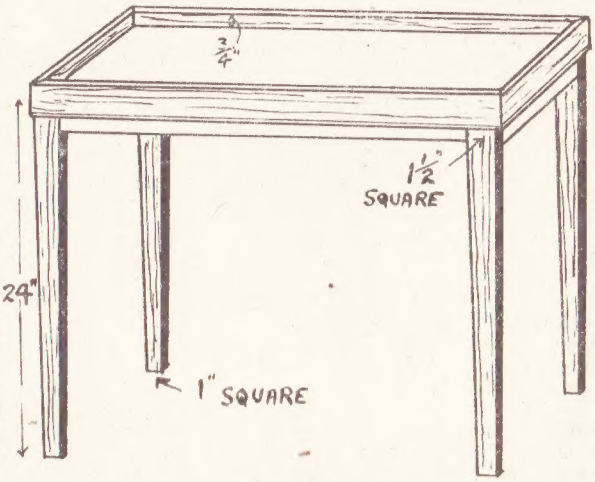


Fig. 1—The legs and top framework

Plywood Top

The writer used a sheet of ½in. thick plywood for the actual table top and also for the outer cover. It is not necessary to use wood so substantial but it certainly makes a very robust job. Ply boards half this thickness would be quite satisfactory, or even three or four narrow planks of wood glued together to make up the necessary width. If this latter course is adopted, it is better for the whole to be faced with thin ply.

Legs and Bars

Start making the table by cutting the four legs and the four spacing bars. The legs are 24ins. long and taper from 1½ins. square at the top to 1in. square at the bottom. For the spacing bars, which are 3ins. wide and 1in. thick, you will need two pieces 27ins. long and two pieces 17ins. long.

Cut a tenon about 1in. long and let into the legs, as shown in Fig. 3. Make them a good tight fit and finally glue in position. The ply top can now be glued on to this framework. Fine panel pins can be used to help secure it firmly into position.

The edging to go round the table top is cut from wood 2½ins. wide and ½in. thick. Carefully mitre the corners and give a finish to the pieces by rounding the tops and bevelling the outside bottom edges, as shown. Now glue in position and fix firmly with a few panel pins.

The table is finished off by being well glasspapered, stained to the desired shade and polished with either french polish or a wax polish. If it is decided to have the top lined with felt, this can also be done now. Green is the colour usually employed, but it is not necessary to stick to this custom—there are many very attractive colours now obtainable in the felt that could be used.

The table top, after glasspapering smooth, is coated with a thin layer of hot glue and the felt carefully laid on and smoothed out gently. A flat iron is useful for this process, but warm it slightly so as not to chill the glue too quickly.

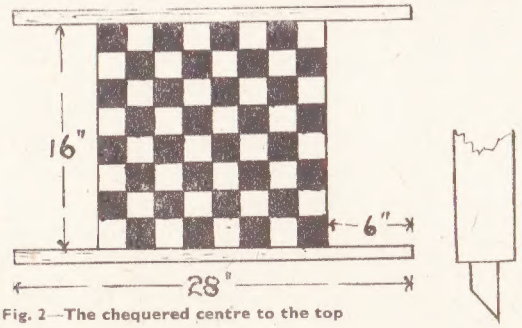


Fig. 2—The chequered centre to the top

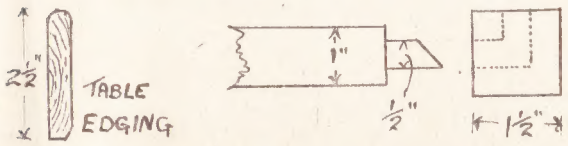


Fig. 3—Shape of edge and the corner leg joint

The Chequer Board

The next job is to make the chess/draughts board to fit into the table top recess. Large 2in. squares make up this board, but the more usual size of about 1½ins. can be used. It is only necessary in such a case to fit a plain surround 2ins. wide all round to make the board up to a 16in. square.

The making of chess/draughts boards has been described many times in past issues of *Hobbies Weekly*, so that we need not go into details about its construction here. The alternate light and dark squares can be made either by using different colour woods or by using a light wood and staining half the squares black.

Alternate Strips

The best way of making up the board is to glue together alternate strips of light and dark wood 2ins. wide and about ⅜in. thick and when dry to cut across at 2in. intervals. By turning round every other strip and gluing these together we have the correct layout. To strengthen the board it should be glued to a 16in. square of plywood.

In order to keep the board centrally placed and to make it fit into the recess of our table two spacing bars are necessary. These are 28ins. long, 1in. wide and the same thickness as the

(*Continued foot of page 264*)

Practical hints on two common kinds of AWKWARD DRILLING

As anyone who uses a brace and bit or hand drill will know, hard woods bore well, allowing holes to be made with clean sharp edges. Not so soft woods, like the popular deal and pine, for here, although the bit enters quite well, it invariably splinters the edges at the lower side as it comes through. The trouble occurs equally with the spiral bit or the flat cutting-edge type.

This difficulty with soft woods can, however, be overcome by either of the following methods.

A Simple Method

In method (1) first drill what we might call a 'pilot' hole with a quite small bit of, say, $\frac{3}{16}$in. or so diameter. Now bring into play the bit that is to make the final hole, and starting from the upper face of the wood, bore down for about half to two-thirds its thickness, taking care, of course, to preserve perpendicular. Removing the bit, turn the material over, and having the lower end of the pilot hole to work from, start boring from this side, continuing till the two holes meet (see (A) Fig. 1).

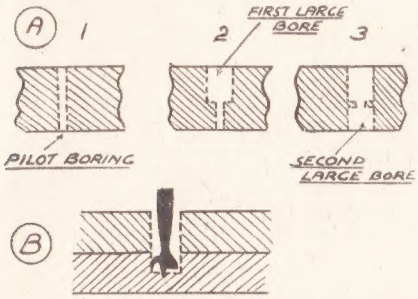


Fig. 1—Boring in soft wood

Thus a side-to-side hole will be secured with perfectly clean edges at either end. As two holes in this case have to meet, it is obvious that, perhaps, rather more care than usual should be exercised in aligning, etc., as the necessity of too much cleaning out afterwards may undo the good work of the 'two-side' boring.

Method 2 has the advantage that it allows of straight through drilling. Here the material to be worked on is clamped tightly to a second piece. This, if possible, should be of the same kind of wood, but it is not absolutely essential. The main point is that the clamping must bring the adjoining surfaces into absolutely tight contact with one another.

Boring is now carried out in the usual way, work continuing, however, till the bit is well into the second piece, as (B) Fig. 1. Upon separating the pieces it will be found that the upper one has been bored with a hole having clean edges at both ends. Of course, what happens in this case is that temporarily the two pieces become in effect a single block of wood.

Holes in Glass

An almost impossible piece of drilling that sometimes falls to the lot of the handyman is making a hole in a sheet of glass. This can be done, however, as follows.

For very small holes a wheel drill or other kind of high-revolution drill must be used, but in the place of a usual bit there is inserted a piece of hard cast steel or any other metal that has been given extra hardening. This is worked as the usual bit, and once a 'grip' on the glass has been obtained it travels through comfortably.

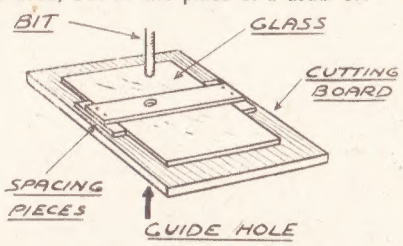


Fig. 2—Frame to guide bit

A Guide

It helps quite a lot if some sort of guide is fixed up for the drill. This can be a simple arrangement, as shown in Fig. 2. The glass is placed on a flat rectangle of wood. At either side of the sheet two packing strips are placed screwed to the base, and between these a cross piece in which a hole has been bored at the desired point. The bit is placed in this and consequently all the usual difficulty experienced in keeping it on the same spot for the initial surface-breaking is entirely eliminated.

Once started, the hole must be kept well lubricated with a paste made up of turpentine and carborundum powder. This is essential with all glass drilling.

Tubing Cutter

Larger holes can be bored in glass, as are sometimes required when making glass trays or shelves, by employing a length of brass tubing in a bigger drill, or even in the usual brace. The tube is fitted in the place of the normal bit, and its cutting power is enhanced by taking out a number of vertical slots on its lower edge, as indicated in Fig. 3.

These are best made with a hacksaw, the tubing being fixed firmly in a vice while the job is done. When the corners of the slots become dulled after a good amount of cutting, they can be sharpened again by re-fitting the tube in the vice and filing with the file flat across the end.

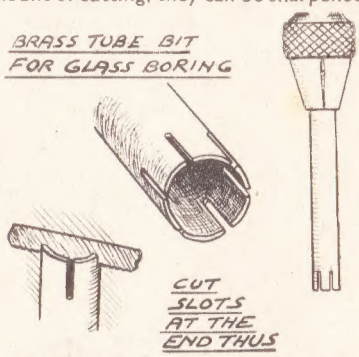


Fig. 3—A tubing cutter for glass holes

Again the guiding frame is invaluable for accurate starting, as also are liberal applications of the 'grinding paste'.

It is interesting to note that as well as glass; porcelain, terra cotta and similar materials can be readily bored which can be useful when wishing to repair, say, some broken ornament, as wire can be threaded through adjoining holes on the side of an ornament not seen by people in the room.

And one final point about glass-boring. It is very important that the glass should be in tight contact with the underlying board immediately below the point being bored. Any suggestion of sagging here may well cause cracking to take place.

Games Table—(*Continued from page 263*)

chess/draughts board, and are easily fixed with a spot of glue and a few panel pins.

The plain side of the chess/draughts board can be marked out for some other game such as ludo. It is quite an easy matter to glue a thin ludo card board on for this purpose.

Other games boards can be made to fit into the recess of the table as the fancy demands. It could even be adopted as a work bench for certain types of jobs, and a very neat and efficient one it can be too.

The making of the actual top, or we can call it the lid of the table puts the final touch to a very useful article. This operation is probably the easiest of all and it is only necessary to cut a piece of ply to the measurements of the table, plus $\frac{1}{2}$in. all round. Four strips of beading are then glued and pinned round, taking care to make neat mitred corners.

The thickness of the top does not matter and it must be decided by the job the table and lid is expected to do. If it is merely as a cover, then quite thin ply will do, but if it is needed to carry something heavy, then anything up to $\frac{1}{2}$in. thick could be used.

Finally, make the cover to match the rest of the table and give a last polish all over. (337)

Circuits for mains and battery set to operate
ALL-WAVE SWITCHING

THE circuits given here can be used with confidence in mains and battery-operated circuits if a new receiver is under construction, or an old receiver being modified. In the latter case it may be intended to add one or more short wave ranges, or, if ex-service apparatus is concerned, provide the usual long and medium wave bands, where these are not present.

Individual Coils

Many efficient modern circuits employ a separate coil for each range, a switch with the required number of 'ways' selecting the coils required. Such a circuit, for H.F. and detector stages, is shown in Fig. 1; it has two tuned circuits, S.W., M.W. or L.W. coils being selected in pairs. Each pair of coils is wholly independent of the others and, with a 4 or 5-way switch, four or five wavebands can be used, if desired, instead of the three shown.

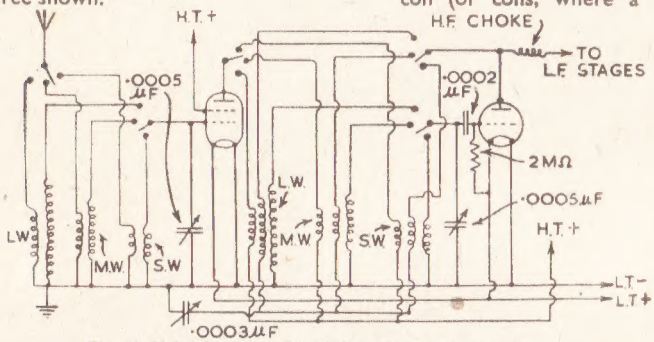


Fig. 1—Using individual coils for three wave bands

Small coils of this type can be bought to cover all wavelengths between 9 and 2,000 metres, so the constructor can provide as many wavebands as he wishes. With three wavebands, 19 to 50 metres, 200 to 550 metres, and 1,000 to 2,000 metres, are usual. If L.W. stations are not required, two S.W. bands can be provided. (Usually about 12 to 30 metres, and 30 to 80 metres or thereabouts).

If the aerial coils are mounted above the chassis, and the detector coils below, no further screening will be required. If the constructor prefers all coils out of sight, they may be below the chassis, some distance apart, with a screen between them. Any chance of stray coupling will be reduced by mounting the three aerial coils at right angles to the detector coils.

This circuit is excellent for superhet use, the aerial coils remaining as shown. Two poles on the switch, wired to oscillator anode and grid condenser of the frequency-changer, will deal with the oscillator coils. If an R.F. stage is used, wiring can follow that for the stage in Fig. 1.

With Dual-Range Coils

If a S.W. band is being added to an old-type receiver, the latter will usually have dual-range (L. and M. wave) coils. These need not be discarded if Fig. 2 is followed. Here, two switch positions are wired together, so that the dual-range coil (or coils, where a H.F. stage is present) are in circuit at both these positions. A further contact on the switch provides long/medium wave switching, as shown. In the third position the S.W. coil is connected, as in Fig. 1.

With a H.F. stage, the aerial coils will be treated in exactly the same way. That is, in two positions the dual-range aerial coil will be connected, with the S.W. coil brought in on the third position. Component values are the same as Fig. 1.

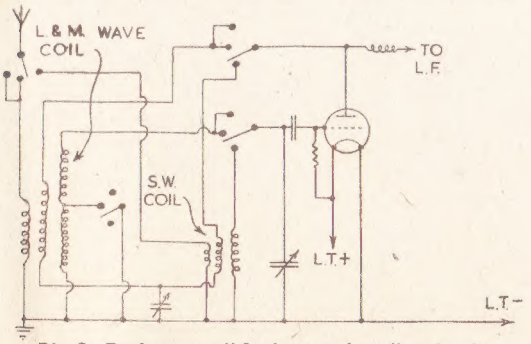


Fig. 2—Dual-range coil for long and medium bands

As with the other circuits, the low-frequency amplifying stages can follow usual lines, and are not indicated. If an existing receiver is being modified to introduce additional wavebands, the L.F. stages will not require modification.

'Earthing' Switching

This method, shown in Fig. 3, results in a great simplification of wiring. It gives good results, and in many cases will be considered satisfactory, but does not achieve quite the same standard of efficiency as the use of individual coils, as already mentioned.

In this circuit, the unrequired sections of the coils are progressively shorted out, for M.W. and S.W. reception. The S.W. coils may be entirely separate from the L. and M. Wave coils; in this case, S.W. results will be excellent, because no grid-circuit switching is involved.

On Medium Waves, however, the presence of the S.W. coils will slightly reduce selectivity and sensitivity. On Long Waves, little effect is noted, because of the lower radio-frequency.

C1 and C2 may be pre-set, and adjusted for best results. If fixed, condensers of about ·0001 mfd. are suitable. The tappings on the S.W. coils are desirable, to reduce damping. If C1 and C2 are sufficiently small for best S.W. results, with connections taken directly to the top of the S.W. coils, the capacity will be insufficient for best L and M. Wave reception.

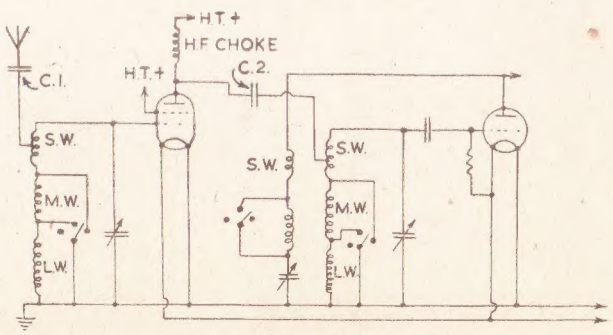


Fig. 3—Simplified type of switching

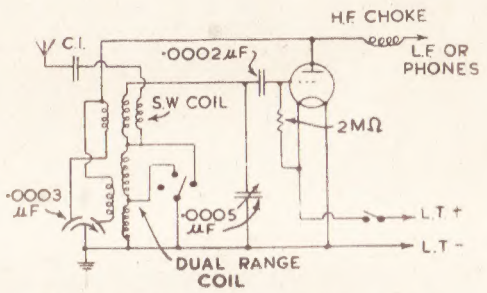


Fig. 4—A simple efficient circuit for I valvers

This circuit can equally well be used with frequency-changers, where it has much to recommend it, losses, here, being somewhat less important, especially in the oscillator section.

Coupling Arrangements

Switching in Fig. 3 is further simplified by coupling the R.F. stage by means of a high frequency choke, and this can be done with both the circuits in Figs. 1 and 2, thereby eliminating one set of switch contacts, and associated wiring. However, as the unit-type coils mentioned normally have coupling windings, it is best to employ these, if present.

Tuned anode coupling can be used. With this, the R.F. valve anode will be taken to the fixed plates tag of the detector tuning condenser, and the coil or coils returned to H.T. positive, with a by-pass condenser of about ·1 mfd. from this point to chassis. With such coupling, effective screening is essential, or uncontrollable oscillation will arise.

With Differential Reaction

For the constructor wishing to make a midget one-valver, or a simple detector-L.F. receiver, Fig. 4 will be of interest. This will give excellent results, and the minimum of switching is required. A 3-way single-pole switch provides L., M. and S. waves. The reaction condenser is an ordinary differential type. For S.W. purposes it is turned in the opposite direction to that necessary when employed on L. and M. Wave bands.

An aerial-coupling winding can be used on the S.W. coil, or a tapped coil employed, as in Fig. 3. Such a winding will have so few turns that on L. and M. Waves it is ignored. Lack of grid-circuit switching means that S.W. results will be excellent.

Tuning Problems

For all-wave sets a modern, low-loss ·0005 mfd. condenser is best. Very old condensers may cause inefficiency and crackling on short waves, where conditions are more critical. S.W. ex-service apparatus will normally employ condensers of ·00015 mfd. or so, and these will only enable part of the L. and M. Wave bands to be tuned. This can be overcome by replacing them by condensers of about ·0005 mfd., as mentioned.

Where two or more tuned-circuits are employed, these should gang correctly, or efficiency will be reduced. This can be achieved by wiring a ·00005 mfd. pre-set postage-stamp trimmer across each tuned winding, and adjusting these for maximum volume, treating the ranges individually.

With oscillator coils in frequency-changer circuits, padding condensers of special capacity may be required, and the manufacturer's instruction leaflet should be followed, here, so that condensers suitable for the particular coils employed can be used.

With detector-L.F. types of receiver, no ganging difficulties will arise, of course, as only one tuned circuit is present, with a single-gang condenser. Here, no difficulty will arise with the new waveband or wavebands added, provided a good condenser is used, and a reduction-drive of reasonable quality.

How the amateur fisherman can undertake

PRESERVING MINNOWS

MINNOWS for use as spinning baits can be preserved in several ways, mostly with a formalin solution. Generally speaking, the natural bait is the better, but with the pickled or preserved bait there are advantages. They are more easily carried to the riverside, and they can be handy at a time when live baits cannot be procured. Properly preserved, minnows —or bleak, small dace, and roach, etc.— will keep in good condition for months.

Minnows may be preserved for a long time in a formalin solution of 1 per cent formalin to 99 per cent water. Place in airtight bottle for ten days. If the mixture becomes discoloured, take them out, wash them, and put in fresh solution. Repeat if discolouration returns. If baits become too stiff, reduce strength of the new mixture. If not stiff enough make it a little stronger.

Another prescription is: formalin, ½oz.; glycerine, 3ozs.; water, 20ozs. Keep baits in solution for four weeks. Afterwards by keeping baits in strong salt and water the 'formalin flavour' can be removed.

In Salt

Baits only required for a week or so will keep quite well in salt. Spread a layer of salt on a suitable piece of folded linen, lay the baits on this about 1in. apart, sprinkle more salt on them, and roll them up. Before use, soak baits well in water. This process needs two dressings of salt, as the first becomes very wet after a couple of days.

In Marshall-Hardy's 'Mirror of Angling' appears the following hint for preserving small fish for bait. Wash your minnows. Take 1 fluid ounce of formalin, add 1qt. rain water and 12 drops of a strong solution of washing soda. Having placed the baits in suitable 'screw-top' jars, cover them with the liquid, and leave them in it for six days. Now dissolve 12ozs. of granulated sugar in 1qt. of water. Take the baits out of the first solution (which may be saved for future use), wash them thoroughly and place them in the syrup.

In the Londsdale Library volume entitled *Fine Angling for Coarse Fish*, page 221, the following details of ways of preserving natural baits are given: If the baits are to be mounted on a flanged spinner, they should be placed in a flat dish or tray filled to the depth of a few inches of 10 per cent solution of formalin (4 tablespoonfuls of formalin to 1pt. of water). After the baits have lain in this solution for twelve to twenty-four hours, they should be washed, transferred to a wide-mouthed bottle, and completely covered with a 5 per cent solution. The bottle should be tightly corked and they will keep indefinitely.

If the baits are intended for use with a flangeless trace, instead of using a flat tray, they should be tightly jammed in a wide-mouthed jar or bottle. They will then, more or less, assume the desired curve.

They should be covered by the 10 per cent solution for twenty-four hours, well washed in fresh water, and covered over again with fresh 5 per cent mixture. When baits are required not too tough, the solution can be made weaker, say, half above strength. To get brighter baits add 2 tablespoonfuls of glycerine to 1pt. of solution.

Kill your minnows before placing in the formalin solutions. The sooner they can be put into the liquid the better they will keep. Minnows or other small fish treated in any of the above formalin methods will last an indefinite time—or should do.

How to Kill

Minnows should be kept alive until just before they are to be introduced to the solution, and then killed by holding each fish between thumb and forefinger of left hand and giving it a sharp flick on the head with the forefinger of the right hand. Another method is by inserting the point of a baiting needle, or a strong pin, in the centre line of the back at the point where the head of the bait joins the body. Do not put live minnows direct into the solution—it is cruel. Be sure and kill them first.

To remove taint of formalin when necessary, take baits out of solution, wash well and rub down with salt until they are quite cleansed. Then put them into a solution of sugar and water (one in five) until all smell of formalin has disappeared. Replace in airtight jar until required. (327)

Dimensions you should know in gauge O and OO of MODEL RAILWAYS

A high bridge carrying the Manchester—Holywell line

IN the last article we dealt with the standard dimensions that should be used when making gauge O, OO and HO trucks and vans. As pointed out, the gauge for OO and HO trains is the same, the difference being, that while HO is true 'scale-model', OO is half a millimetre to 1ft. too big, thus making vehicles a shade too wide and high.

This is not very noticeable when all items are to the bigger size, but the mixing of HO and OO standards is not too good. These two $\frac{3}{8}$in. gauge scales often pass under the general name of OO (which was the first on the market), so if constructing some pieces of equipment as a present for a friend or for a line you have not closely studied, make a point of finding out which is the ruling scale.

Track Details

Now apart from rolling stock dimensions, there are several surrounding measurements on and about the track itself that the modeller should have clearly in mind, for they are continually cropping up.

It is pretty safe to say that two of the main 'line side' items that enthusiasts invariably make for themselves are stations and bridges, as both have usually to fit special conditions on the layout in question.

In OO and HO, stations can be true 'scale-model', but only in gauge O if the space available is especially generous. Just imagine what an area a true gauge O, scale-model, terminus of 12 or 14 platforms would take and with each long enough to accommodate ten or fourteen-coach trains. Fully worked out, a single terminus of this sort would practically cover the whole floor of a moderately-sized room.

Although length and width of platforms have normally, therefore, to be reduced in size, the *height* of the platform above rail level can and should be true scale and this is one of the 'line side' measurements the modeller should always have in mind. A too high or low platform can quite spoil the effect of a station.

Platform Height

Although there is some slight variation about the country, the standard platform height is the same as the buffer centres, which is for gauge 0, $\frac{15}{16}$in. above *rail level* (see Fig. 1). The actual height of the platform front from baseboard level will depend on what kind of rail is being used. Tinplate stands considerably higher than scale track, while in scale track itself there are variations according to type.

So take the track height into consideration, therefore, when making the station. It is not just sufficient to raise or lower the station as a whole after construction, as this will probably throw out any doors or openings that have been made on the road side of the platform buildings.

The *distance* of the rails from the platform face also is important, as if too far away there is an ugly and unrealistic gap between the coaches and the edge, while if too near, there is always the danger of vehicles catching.

The correct distance for gauge O is $\frac{3}{4}$in. from the *inner* face of the near rail when the platform is straight, but this figure must be increased a little if the station lies on a curve, as bogie stock always tends to cut across the curvature of the rails, while the buffers at either end stand further out than when on straight track. For this reason as far as possible, stations on anything but the slightest of curves, should be avoided.

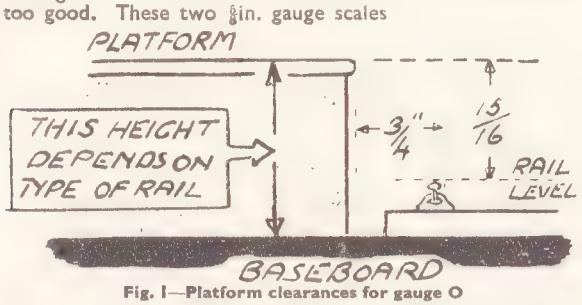


Fig. 1—Platform clearances for gauge O

Tracks

When two sets of track lie side by side another important measurement comes in the '6ft. way', that is the distance between the two tracks. The 'true scale' for this in gauge O is 80mm. or $3\frac{5}{32}$ins., but to save space when two tracks are between platforms, the '6ft.' can be reduced to $2\frac{1}{2}$ins. (inside rail to inside rail).

This means that the platform faces in a two-track station can be $6\frac{1}{2}$ins. apart for gauge O, $3\frac{1}{4}$ins. in HO—OO having to be the HO figure multiplied by $1\frac{1}{7}$. This is one place where the difference of scale of HO and OO makes itself apparent and demonstrates the advisability of not mixing the standards.

Bridges

Bridges are rather a law unto themselves, for you will notice as you go about the country that some are really high, while others sit tight on top of the tracks. For gauge O the *minimum* height for close-fitting bridges (seen everywhere about the country) is $3\frac{7}{8}$ins., while the width between the buttresses for the standard double track is $7\frac{1}{4}$ins. (Fig. 2).

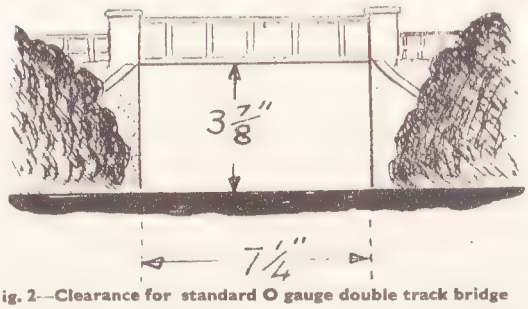
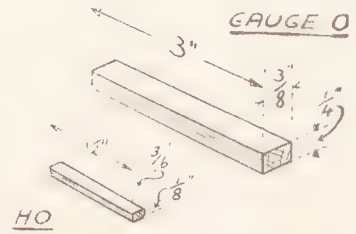


Fig. 2—Clearance for standard O gauge double track bridge

Tunnel mouths, even the smallest, are generally higher than the close-fitting bridges, an average tunnel front giving a 6in. clearance. However, as long as you know and keep the minimum heights and

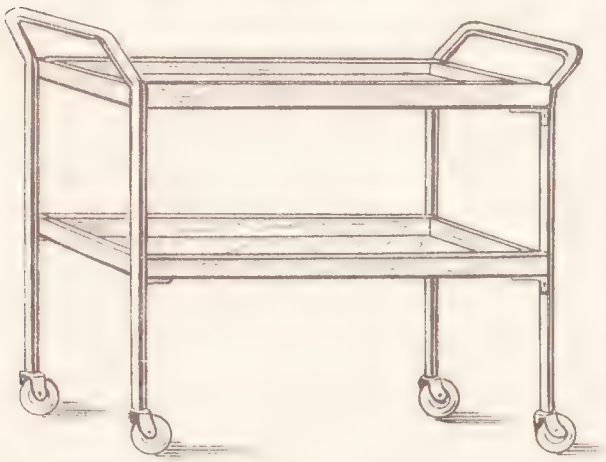
(*Continued foot of page 268*)



Sleeper sizes for the two gauges

How some wood and tubing combine to make a

MODERN DINNER WAGGON



A DINNER waggon is always useful. If there is no use for one in your own household, they do make valuable presents. The one shown in this article is as simple and easy to make as is possible, and as regards looks, well, it is as modern as it is simple. The material needed to make this superb waggon is shown in the list.

MATERIALS

Tubing—¾in. outside, 2 lengths 7ft. (Electric conduit tubing will do).
Plywood—2 sheets ¾in. thick, 2ft. by 1ft. 4ins.
Wood strip or moulding—½in. by 1½ins. 4 lengths 2ft.
Wood strip or moulding—½in. by 1½ins. 4 lengths 1ft. 3ins.
Wheels—1½in. diameter casters, 4 off.
Rivets or bolts—¼in. diameter, 1in. long, 8 off.
Screws—¾in. long, 16 off.
Panel pins, ½in. and cold water glue.

Bending the Tubing

The first job is to bend the tubing. The easiest way to do this is to first drill two holes about 1½ins. diameter, 1ft. 5ins. apart in an old railway sleeper or any other similar piece of wood. Pass a length of tubing through one of the holes until it protrudes about 2ft. 9ins. Bend the tube at right angles at this point, thus forming one of the legs.

Remove the tube from the hole and insert the other end, this time the bend should be made so the double bend is exactly the same width as the trays, which in this case will be 1ft. 4ins. The other tube is bent in precisely the same way, taking care to see that the widths of the two double bends are identical.

Next, with the two tubes bent horseshoe fashion, they should be inserted in turn into the wood bending block, this time with both legs through the two holes. The tube is passed through the block until the cross piece touches the wood, then by holding the block in a vice, or if it is large enough, by standing on it, the tube is bent as shown, thus forming the handles. It is pointed out that the holes in the block must be large enough to allow the tube to be removed after this final bend, and it is assumed that the wood is about 3ins. thick.

The tubes should now be drilled to take the tray brackets. This calls for two holes in each leg, 14ins. and 26ins. from the bottom. If the usual type of caster is used, the bottom end of each leg should be plugged with wood and the casters screwed to the wood.

The Trays

Making the trays is a simple woodworking job. The material is bought ready made, and all that is to be done is to put it together. The corners of the side edging can be butt-jointed, as the ends will be hidden by the tubular legs. Glue the side edges to the plywood and secure with panel pins driven in from underneath.

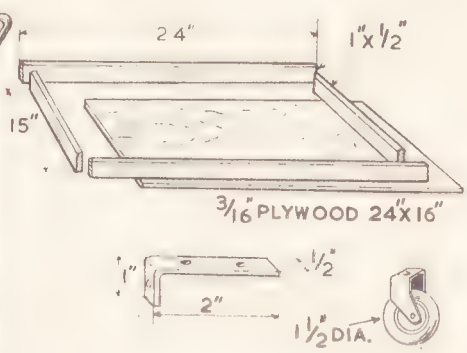
The Tray Brackets

The tray brackets are made from ½in. flat iron ⅛in. thick. They should be drilled to take the rivets or bolts, and drilled and countersunk for the screws. Very often a similar type of bracket, which can be adapted, can be bought from departmental stores for a few coppers.

Finishing and Assembling

Before the brackets are fitted to the legs, it is best to give the latter a good polish with emery cloth. When perfectly clean apply a coat of priming paint, followed by one or two coats of good enamel in colour to suit. The brackets should be treated in a similar manner, and before the last coat, they should be secured in position.

The trays can either be primed and enamelled to match, or they can be stained and polished according to taste. All that remains is to screw the trays to the brackets, taking care they are pressed well to the legs while the screws are fixed. If the instructions are followed carefully, the result will be a smart looking modern dinner waggon which would cost several pounds to buy in a shop. Apart from this economy there is the enjoyment the handyman will experience in the process of construction. (315)



Model Railways—(*Continued from page 267*)

widths in mind, you can go safely ahead with the model in question.

Finally, with regard to the line itself, there should be a clear understanding about sleeper spacing and sleeper sizes. There is, no doubt, but that much good track is spoiled by sleepers that are the wrong size and too widely spaced. This latter is, of course, often a case of economy, but this excuse cannot be put forward for sleepers, that if brought up to real railway size, would be massive baulks of timber.

The true scale-model sleepers in gauge O is ⅜in. by ¼in. by 3ins. and are spaced at 1in. interval along the track. This would use an enormous number of chairs in model work and are mechanically not necessary, as model track is quite well supported with sleepers and chairs spaced 2ins. apart.

For appearance sake, however, it is better to put in the correct or near correct number of sleepers and then have chairs only on those lying 2ins. or so apart. HO sleepers being half size to gauge O are, of course, 3/16in. by ⅛in. by 1½ins. in true scale.

Well, there we have the main dimensions one has to watch when starting to build equipment in these popular sizes, so right away with your next effort.

A pleated cone centre can be converted into

A NOVEL FIRESCREEN

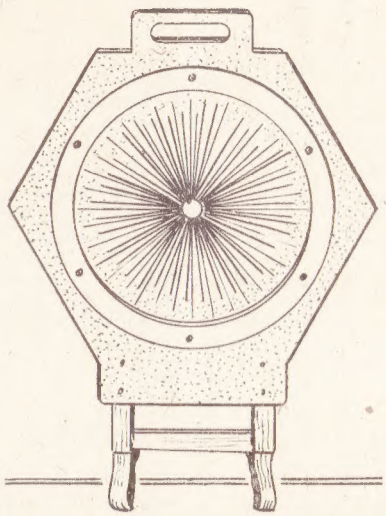
MANY readers will remember the pleated paper diaphragm, employed in the early days of the loud speaker. Whatever its merits as a reproducer of sound, it certainly presented an artistic appearance, and is revived again here as a panel for a fire-screen. A simply designed framework is used to show it off, and well made, it forms quite a pleasing article of furniture, when a fire is no longer needed during the warm summer months.

For the frame, plywood or plywood substitute can be employed. The pattern for it is shown in Fig. 1. The design is quite easily set out on the wood direct, if a piece of it, cut to the outside dimensions is provided first. Centre it, and from the centre strike the 12in. diameter circle shown.

The Hexagon

Ignore the second and outer circle at this stage. At 2ins. from top and bottom, strike lines across the panel, and at 4½ins. left and right, mark points on these lines, from which, to a middle cross line, the hexagon shape can be pencilled in. The remainder is easy.

Saw out the middle circle, and at the top, as shown in the drawing, bore a couple of 1in. holes, 2ins. apart. Remove the wood between these, and a slot results for lifting and carrying the screen about. Now give the whole a thorough



enamel finish should be chosen then, not stain and varnish.

From the drawing it will be seen that the stand consists of two feet, shaped as shown, with short upright posts attached, to which the panel will be fixed. These are kept apart with a crossbar.

Posts and Crossbar

Cut both the posts and crossbar 1in. square, or ⅞in. by 1in. if the former thickness of wood is employed. The heights and length of these parts, as given, do not include the tenons, so add 1in. to them for that purpose, 2ins.

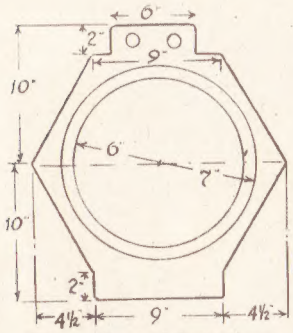


Fig. 1—General dimensions

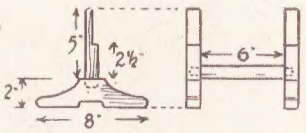


Fig. 2—Details of feet portion

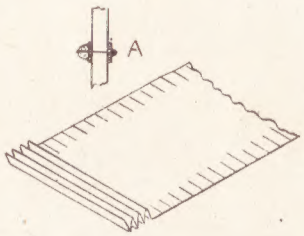


Fig. 3—The pleated centre

doing all over with medium, and then with fine glasspaper, paying particular attention to the edges, both inside the circle and out. Make the panel glass smooth, and ready to receive its finishing treatment.

The Stand

The stand, Fig. 2, can be made up from any wood available, ⅞in. to 1in. thick. Only a small piece is needed here, obviously, and if a piece of hardwood is handy, it would be much preferable to deal. However, deal can be used if nothing better is available, but an extra, of course, to the crossbar, as a tenon here is required at each end. Cut the mortises in the feet for the uprights before shaping them up. The mortises for the crossbar are cut in the posts, at ½in. up above the tenons. Glue all together, then glasspaper.

The panel can be simply screwed to the posts, but it will be better here if a strip, equal to the thickness of the panel, is cut away from the front of the posts, into which the panel can be set, and be level. Fix with round-headed screws, temporarily.

A ring in plywood should now be set out to the dimensions shown in Fig. 1 and sawn. Clean it up with the glasspaper, then fix it to the front of the panel, as in the drawing, with six small brass round-headed screws. The pleated diaphragm will be fitted between this ring and the panel, and held securely.

Suitable Finish

The whole can now be either stained and varnished or enamelled, as preferred. For an article of this kind a bright enamel finish might be considered, paying attention to the colour of the paper used for the diaphragm, to get a harmonising or pleasing contrasting effect.

For the diaphragm, a sheet of suitable paper will be required, either coloured or gold or silver. Unless the paper is fairly stout, it should be backed with cartridge paper to give it added strength. A strip 6¾ins. wide and 43ins. long will be required, with ½in. added for sticking the ends together. A series of marks should be pencilled near the long edges, ½in. apart, then the strip should be folded backwards and forwards in pleats, along the marks, as in Fig. 3.

MATERIAL REQUIRED

Feet (2)—8ins. by 2ins. by 1in.
Posts (2)—6ins. by 1in. by 1in.
Crossbar—8ins. by 1in. by 1in.
Plywood panels—1ft. 6ins. by 1ft. 8ins. and 1ft. 2ins. by 1ft. 2ins.

Fixing the Diaphragm

Bring the ends together and stick securely. The diaphragm can now be pressed flat, the ring on the panel removed, and the diaphragm placed between ring and panel, the ring being re-screwed, to keep it there. There will probably be a tendency for the diaphragm to open out a bit at its centre, so to check this, a simple arrangement is fitted. This consists of two 1in. discs of stout cardboard glued to the centre of the diaphragm. Cover these discs with paper to match on their outside surfaces. Glue them, and press to the diaphragm. Keep them, with a small headed hat pin, tight to the diaphragm, as in detail (A), the pin being pressed into a cork at the rear. When the glue is hard, the pin could be removed.

Such a screen is not only a pleasure to make, but novel and attractive. It will serve for the spare room where you do not always have a fire and certainly look better than a bare open grate.

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